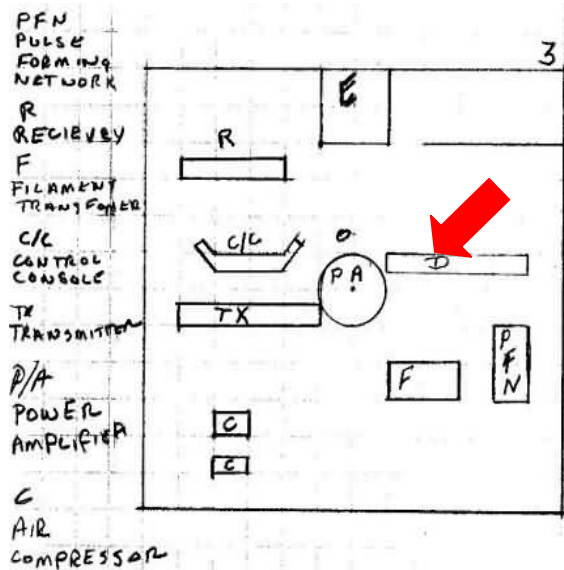


INTERIOR FPS-24 RADAR TOWER EQUIPMENT LAYOUT BY FLOOR

Based on Drawings by StanToler, Jr Winston-Salem AFS

Data Integration by Steve Weatherly Jan 2012



THIRD FLOOR



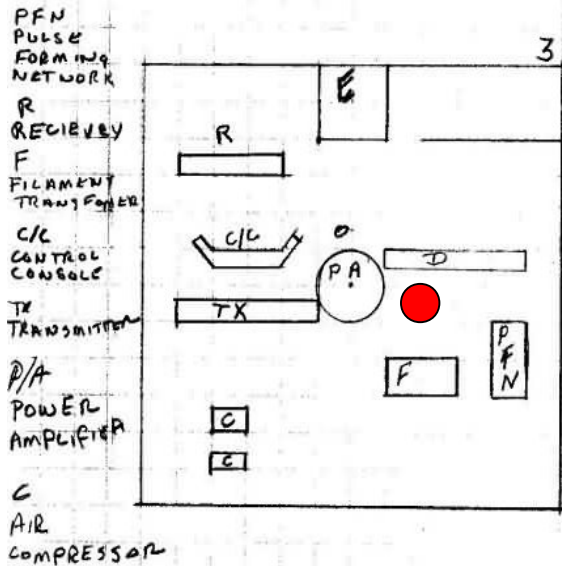
Point Arena AFS from Rick Chinn

Notes – The top of each floor layout was the south side at Mt Hebo AFS. The FPS-24 AJ Console was located in the Operations Bldg. The FPS-24 radar tower was constructed either of Concrete as at Almaden AFS, or of Steel as at Cottonwood AFS. The tower was 64 feet square and 85 feet tall with 5 floors.

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THIRD FLOOR

The ceiling tile is an add-on after the FPS-24 ceased operation.

Originally from the 3rd floor you could look up about 16 feet and see multiple large bus bars (not cable). There was no false ceiling. These bus bars distributed the 2500 amp filament current to the Power Triode Amplifier for the transmitter on the 4th floor. A similar arrangement was visible on the 2nd floor ceiling for the transmitter on the 3rd floor.



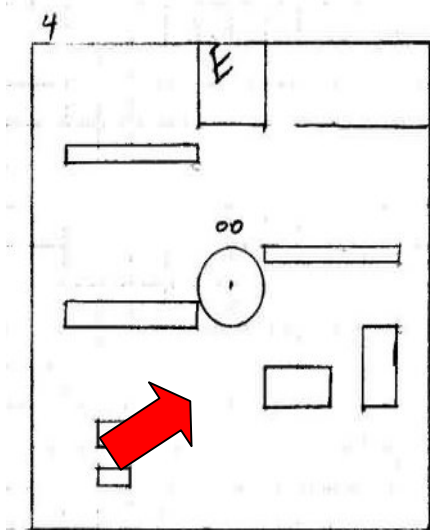
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FOURTH FLOOR

Photo of Fourth floor before abatement. “The interior primarily consists of open rooms on each floor with smooth concrete floors, large concrete piers, and walls clad in smooth plastered concrete and CMU blocks. The ceiling is exposed concrete waffle grids.”

Comments from Page & Turnbull for the FPS-24 tower at the former Almaden AFS.



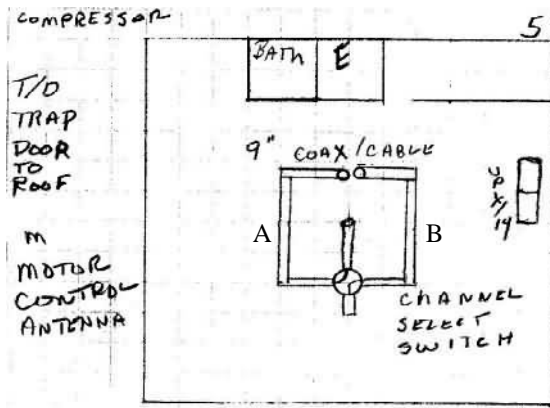
Almaden AFS

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FIFTH FLOOR

Water Cooled Dummy Loads for Tx Channels A and B are shown by the letters A and B. Only one channel could be transmitted at a time while the other would be sent to the Dummy Load or was inoperative.

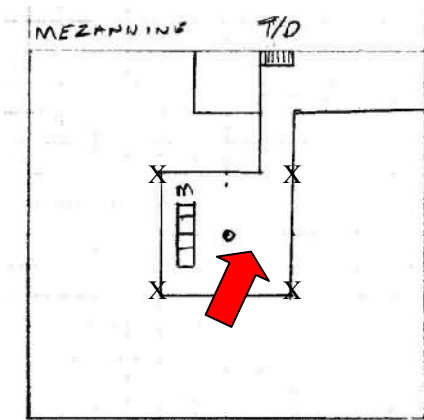
No photos available.

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T/D - Trap Door to Roof with Ladder
M – Antenna Motor Controls and
Wind Positioning System Indicators

FIFTH FLOOR MEZZANINE

The support columns go from the ceiling above the Mezzanine down to the 5th flr. Their locations are indicated by an "X". These columns also supported the metal grid floor of the Mezzanine.

The Trap Door to the top of the radar tower was incorporated into the ceiling of the fifth floor and at the top of the stairwell.



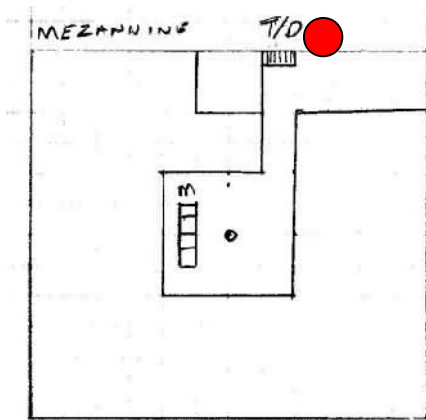
Winston-Salem AFS from Alex Creek/radomes.org

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Trap Door in the roof of the radar tower.

T/D - Trap Door to Roof with Ladder
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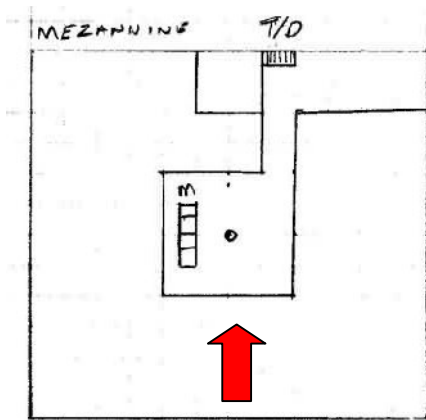
Point Arena AFS from Rick Chinn

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FIFTH FLOOR MEZZANINE

The circular area shown in the ceiling is where the antenna bearing could be accessed. The rotary coupler was also in this area.

Note the “U” shaped ceiling hangers for the 9in dia rigid coax used throughout the building from the third through the fifth floor mezzanine.

T/D - Trap Door to Roof with Ladder
M – Antenna Motor Controls and
Wind Positioning System Indicators



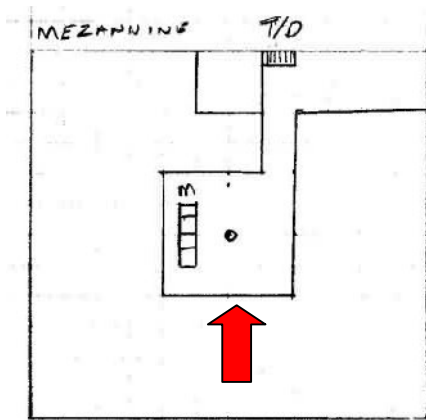
Point Arena AFS from Rick Chinn

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FIFTH FLOOR MEZZANINE

The circular area in the ceiling is for access to the antenna bearing and rotary coupler. The metal grid floor for this area has been removed in this photo.

T/D - Trap Door to Roof with Ladder
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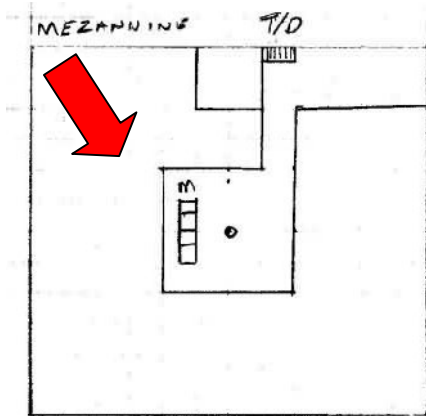
Point Arena AFS from Rick Chinn

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FIFTH FLOOR MEZZANINE

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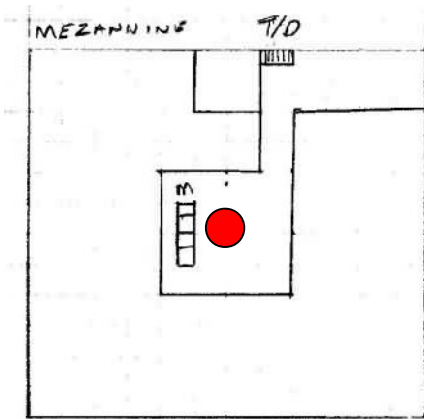
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FIFTH FLOOR MEZZANINE

The ladder shown in the lower left side of the photo provided access from the floor of the Mezzanine to the inspection and testing platform inside the bearing and rotary coupler area. Normally there was no access from this area to the top of the FPS-24 Radar Tower or to the antenna. Only when the bearing was replaced could the roof of the tower be accessed from the Mezzanine.

This was a medically documented high-frequency noise hazard area due to the rotation of the antenna and the stresses on the bearing.



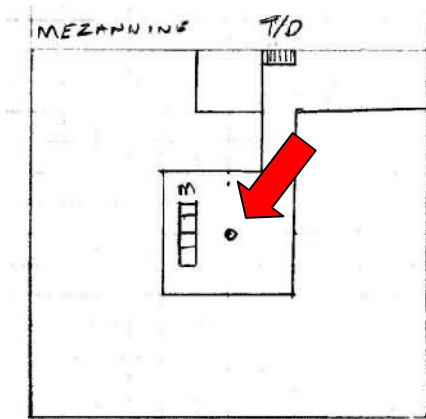
Winston-Salem AFS from Alex Creek/radomes.org

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FIFTH FLOOR MEZZANINE

The ladder goes up to the inspection and testing platform in the antenna bearing and rotary coupler area.



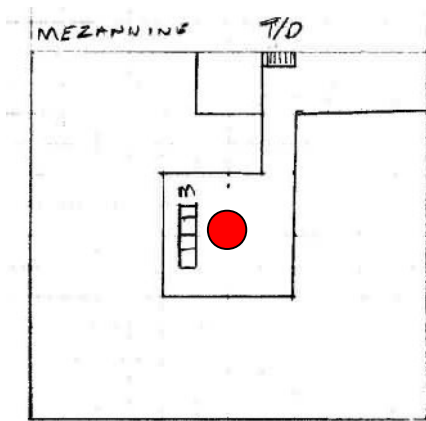
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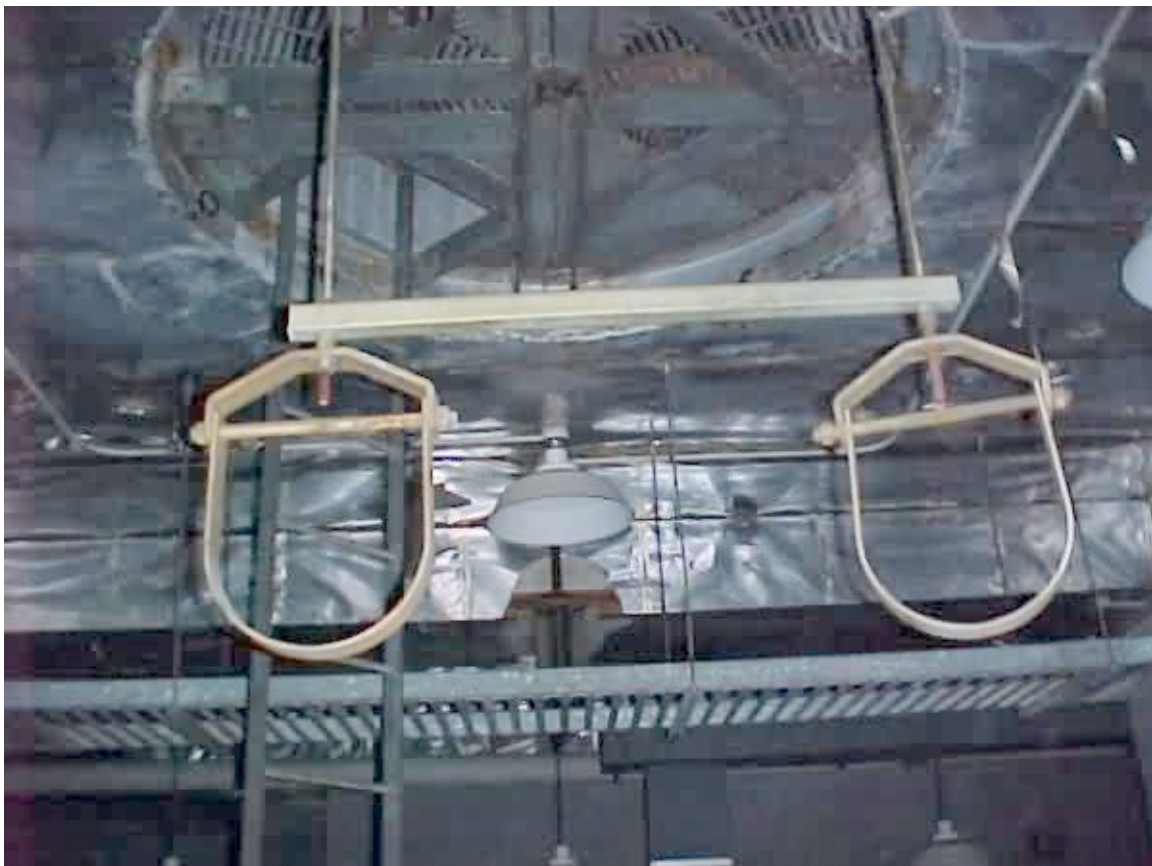
Data Integration by Steve Weatherly Jan 2012



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FIFTH FLOOR MEZZANINE

Note the “U” shaped ceiling hangers for the 9in rigid coax used throughout the third to fifth floor mezzanine. The metal grid platform shown in the circular hole provides footing adjacent to the antenna bearing. This was the area in which the individual ball (or later tapered bearings) could be visually inspected. In addition, it was from this area that lubrication samples were taken for SOAP testing. Bearing failure was detected using SOAP test results and visual inspection.



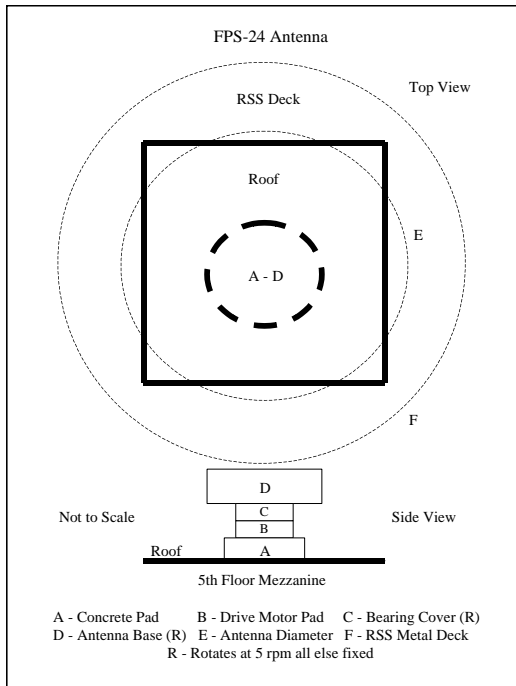
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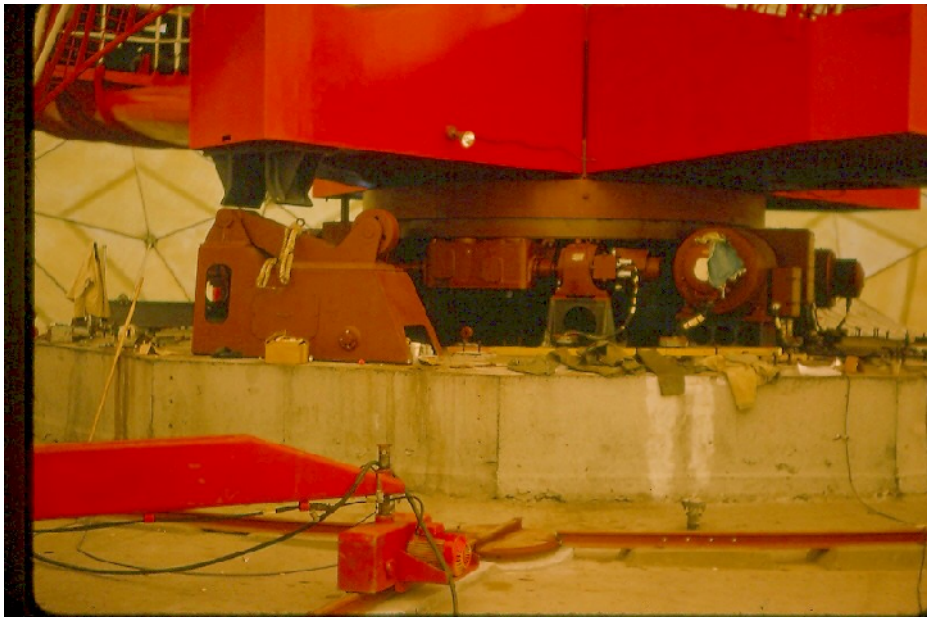
ROOF

Refer to the diagram and photo. A concrete pad on the top of the FPS-24 Radar Tower provided a fixed platform to mount four 100hp drive motors, and the stowing lock (left side) for protection in high winds or when servicing the antenna components and systems like the IFF. The 10 foot dia antenna bearing was inside the brownish colored ring area at the same height as the top of the drive motor. Above the bearing was the rotating antenna. The entire rotating portion of the antenna could be jacked up 18 in for bearing removal and replacement by a depot level maintenance team.

In the background is the third and last FPS-24 radome at Mt Hebo. In Feb 1968 this radome was destroyed in a storm. Subsequently, the FPS-24 was replaced by the FPS-27 relocated from Miles City AFS.

The red track and leg assembly in the foreground of the photo were part of the Kroll Crane used to install and maintain the third radome.

Only the FPS-24 radar antennas at Cottonwood ID and Mt Hebo were protect by a radome



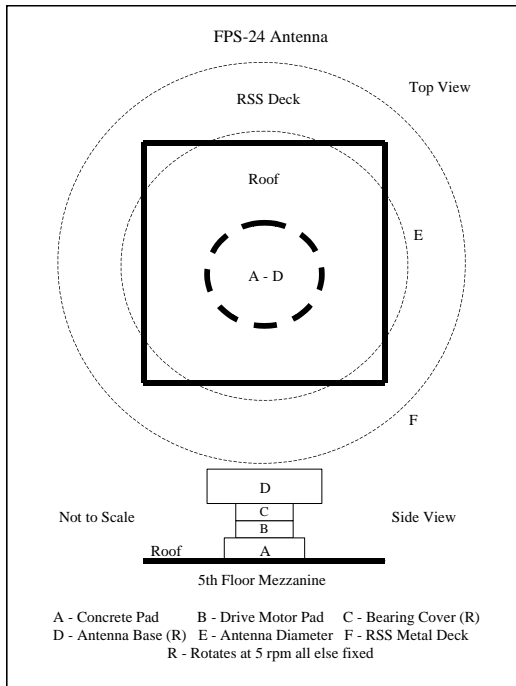
Mt Hebo AFS from Steve Weatherly/radomes.org

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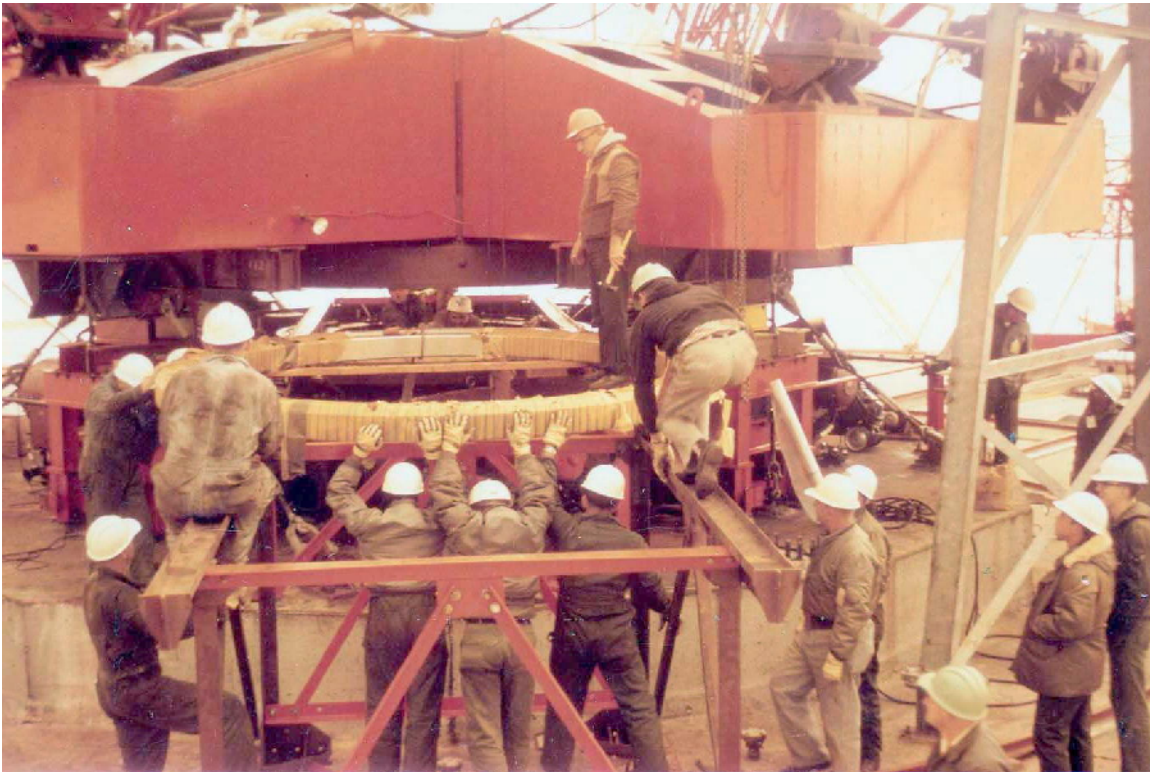
ROOF

The entire 85.5 ton FPS-24 rotating antenna elements could be jacked up about 18in for bearing removal and replacement by a depot level maintenance team.

Only the FPS-24 radars at Mt Hebo AFS, and Cottonwood ID were protected by a radome. The Radome Support Structure (RSS) necessary for a radome was designed with a door opening in the RSS deck to allow for the old or new antenna bearing to be hoisted from the ground.

In the center of the photo is a member of the depot team on the other side of the antenna base that has been jacked up. Normally the bearing could only be seen from within the circular ceiling opening above the tower 5th floor Mezzanine.

Access to the bearing from inside the Radar Tower was needed to inspect the bearings for wear, and collect lubricant samples for SOAP laboratory tests to detect metal debris in the bearing lubricant for an indication of bearing failure.



Mt Hebo AFS from Steve Weatherly/radomes.org

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RECOMMENDATIONS FOR FUTURE ACTIVITY TO DOCUMENT THE RISE AND FALL OF THE FPS-24 SEARCH RADAR

Remember to send in photos from the interior of the FPS-24 Radar Tower. Photos taken during the actual operational time period are limited because of the security issues. After closure, photos from inside the Radar Tower or at places like disposal yards are very helpful. Additional information from unclassified documents such as tower construction and floor plans add creditability to information about a system that has not been used for about 30 years.

Pass along feedback on this study and validate or correct its' content!

Information on the FPS-24 radar site is rapidly disappearing. Indeed, the towers at Mt Hebo AFS (1984) and Bucks Harbor AFS (1998) have been demolished and more will be on the chopping block like at Almaden AFS. The AF organizations that were responsible for the design, construction, operation, maintenance, supply, and removal of the FPS-24 like all the other Air Defense radars and sites no longer exist. Equipment has gone missing or been scrapped. Where did the 12 antennas go? In the 1990s the Point Arena antenna was reported being used as a backstop. Most of their written and photographic records are physically lost and not on the web.

Mt Hebo AFS is an example of what will be happening to other sites. The Corps of Engineers returned the site to its natural state and nothing is left except photos, documents, and memories. This is, however, better than what has recently happened at Almaden AFS. A 2010 remediation project has left the site in its worst skeleton form. I would rather have seen it demolished than to be in its present state. Take a look at http://openspace.org/plans_projects/mt_umunhum.asp and look through the Mount Umanhum Remediation Project Photo Gallery, and the Report Appendices. Interesting photos but sad!

Where have all the radars gone? Have you seen a real FPS-24 antenna, the AJ Console, or any of the vacuum tubes? By the end of Jun 68, over 175 tons of FPS-24 equipment from Mt Hebo AFS were scrapped. Is anything left? What happened to the spare radome panels that were stored in 1967 at the SMALC for the third and last FPS-24 radome at Mt Hebo AFS? Is their any radome material from Cottonwood AFS? Is their any equipment or RPIE in any surviving FPS-24 Radar Tower? Does GE retain any pertinent documentation, manufacturing equipment/jigs, or spare hardware?

**LOOK FOR FPS-24 PARTS, DRAWINGS, SPECIFICATIONS, PHOTOS, AND ENCOURAGE
RADAR SITE VETERANS TO WRITE DOWN OR DICTATE MEMORIES. PASS ALONG
CONTACT INFORMATION AND ASK FOR INFORMATION!**

**YOU CAN DONATE ITEMS TO THE NATIONAL AIR DEFENSE RADAR MUSEUM (NADRM)
OR THE ONLINE RADAR MUSEUM (RADOMES.ORG).**

Cheers!

Steve Weatherly

lweatherly4@comcast.net

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